L 37669-66 EWP(e)/EWP(k)/EWT(d)/EWT(m)/T/EWP(l)/EWP(v)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6028856 SOURCE CODE: UR/0381/66/000/001/0013/0021

53

AUTHOR: Zarochentsev, G. V.

B

ORG: TsNII MPS

14

TITLE: Attenuation of ultrasonic oscillations as a means for studying and inspecting metal structure

SOURCE: Defektoskopiya, no. 1, 1966, 13-21

TOPIC TAGS: metal heat treatment, ultrasonic inspection, metal property, ultrasonic vibration, plastic deformation, nonmetallic inclusions, phase composition, carbon steel, work hardening, cyclic strength

ABSTRACT: The author studies the nature of attenuation of ultrasonic oscillations in metals and the effect which heat treatment and plastic deformation have on acoustic losses. Particular attention is given to the conditions of propagation of ultrasonic oscillations in steel. It is shown that the decay of ultrasonic oscillations in steels is a function of phase composition, carbon content, structural form and the degree of contamination by nonmetallic inclusions. Data are given which illustrate the relationship between the attenuation of ultrasonic oscillations and structural transformations which take place in weld zones, heat-affected zones, and areas subjected to work hardening and considerable cyclic stresses caused by fatigue processes. Cases are pointed out in which the stressed state of the metal has an effect on its acoustic conductivity. Orig. art. has: 4 figures. [JPRS: 35,804]

SUB CODE: 20, 11 / SUBM DATE: 26Apr65 / ORIG REF: 015 / OTH REF: 015

Card 1/1

UDC: 620.179.16

~~65089~~ 69589
SOV/112-59-22-46876

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, Nr 22, p 217 (USSR)

18-8200

AUTHOR: Zarochentsev, G.V.

TITLE: Ultrasonic Metal Testing[14]

PERIODICAL: Vestn. Vses. n.-i. in-ta zh.-d. transp., 1958, Nr 3, pp 14 - 20

ABSTRACT: Given are some characteristics of metals (modulus of elasticity, Poisson factor), which can be found from the speed of ultrasonic wave propagation in tests pieces with certain dimensions. From the degree of absorption of US-oscillations at different frequencies, the mechanical properties of a material can be judged. The absorption of ultrasonic waves varies depending on the size of grain, impurities, heat treatment of metal, etc.

M.G.S.

Card 1/1

ZAROCHENTSEV, G.V., kand. tekhn. nauk.

Cold breaking of railroad rails. Trudy TSNII MPS no.154:121-144 '58. (MIRA 12:1)
(Railroads--Rails--Testing)

SOV/137-57-1-1380

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 183 (USSR)

AUTHOR: Zarochentsev, G. V.

TITLE: On the Evaluation of the Brittle Strength and Cold Brittleness of Railroad Rails (Ob otsenke khrupkoy prochnosti i khladnolomkosti zheleznodorozhnykh rel'sov)

PERIODICAL: Tekhnika zhel. dorog, 1956, Nr 3, pp 21-24

ABSTRACT: Whole railroad rails of the R-50 and R-43 types, made of open-hearth, Bessemer, and experimental converter steel were tested for cold brittleness (B) and dynamic strength at +20, -20, -40, -60, and -80°C temperatures. The a_k was also determined on standard specimens. The results are presented in the form of charts and diagrams. A chart of the typical fractures of rails under a drop hammer at temperatures from +20 to -80° is adduced. The effect of various elements on toughness and B is adduced. Carbon decreases the ultimate resilience (rupture work) and raises the temperature of the transition of the rail material into the brittle state T_b. P and N decrease the cold resistance; As increases the ultimate resilience and raises the T_b. The dependence of B on Si,

Card 1/2

On the Evaluation of the Brittle Strength and Cold Brittleness of Railroad Rails

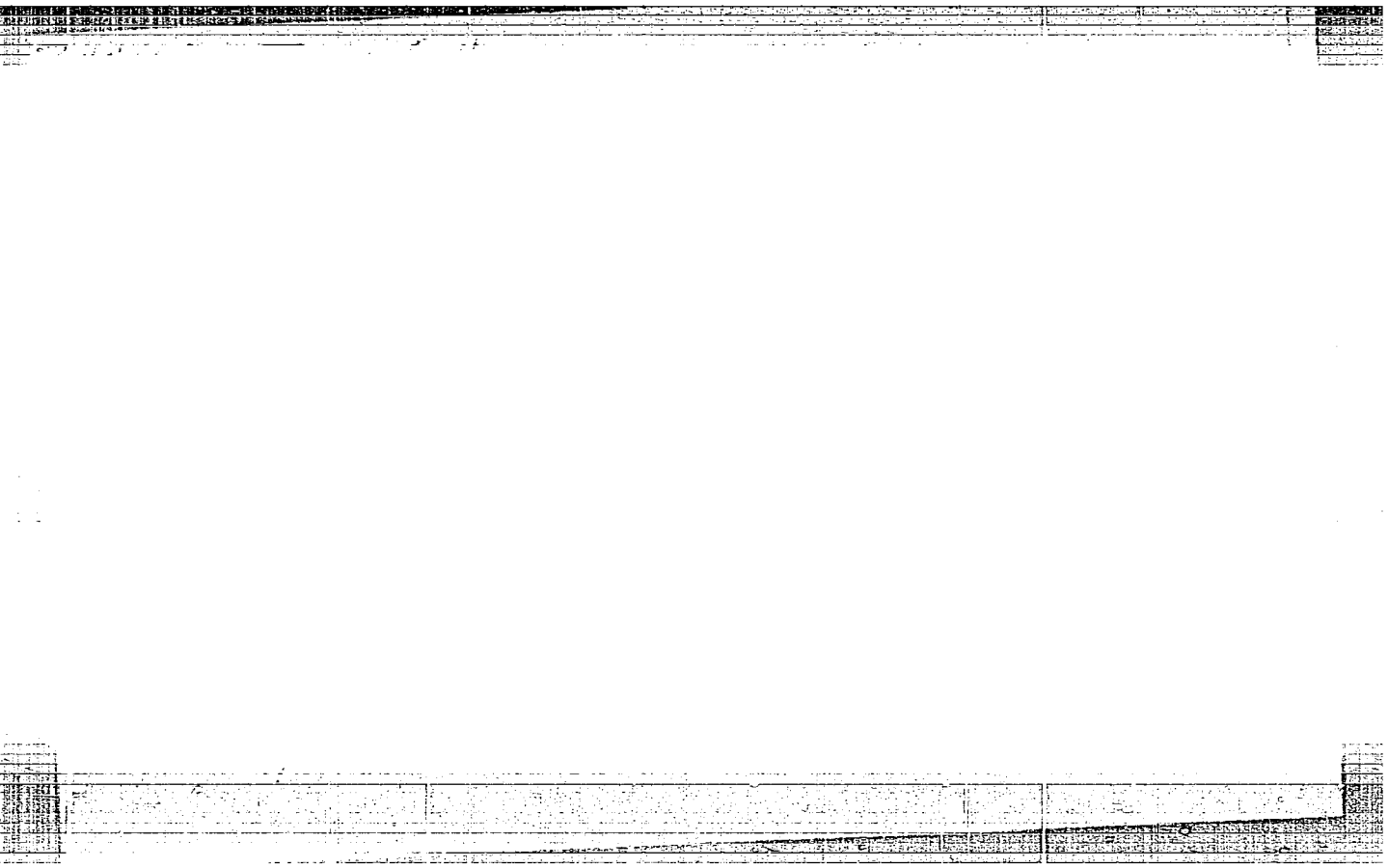
S, and Mn contents was not established. Comparative tests of untreated and of normalized rails revealed significant increase in the ultimate resilience of normalized rails of both the open-hearth and the Bessemer steel; this advantage increases with the decrease in the testing temperature: The work for the breakdown of normalized Bessemer rails increased by 17% at -40° and by 185% at -80°. It was established that there is no correlation between tests at +20 and at -80°; hence, industrial acceptance tests performed at ambient temperature do not represent the true degree of B; the necessity of supplementing these by low-temperature tests is noted. To decrease the B of rails the following measures are recommended: Flaw-detection, improvement of roll-pass design, perfecting of the converter process, and normalization at 800° with soaking for three hours and cooling in air.

Z. B.

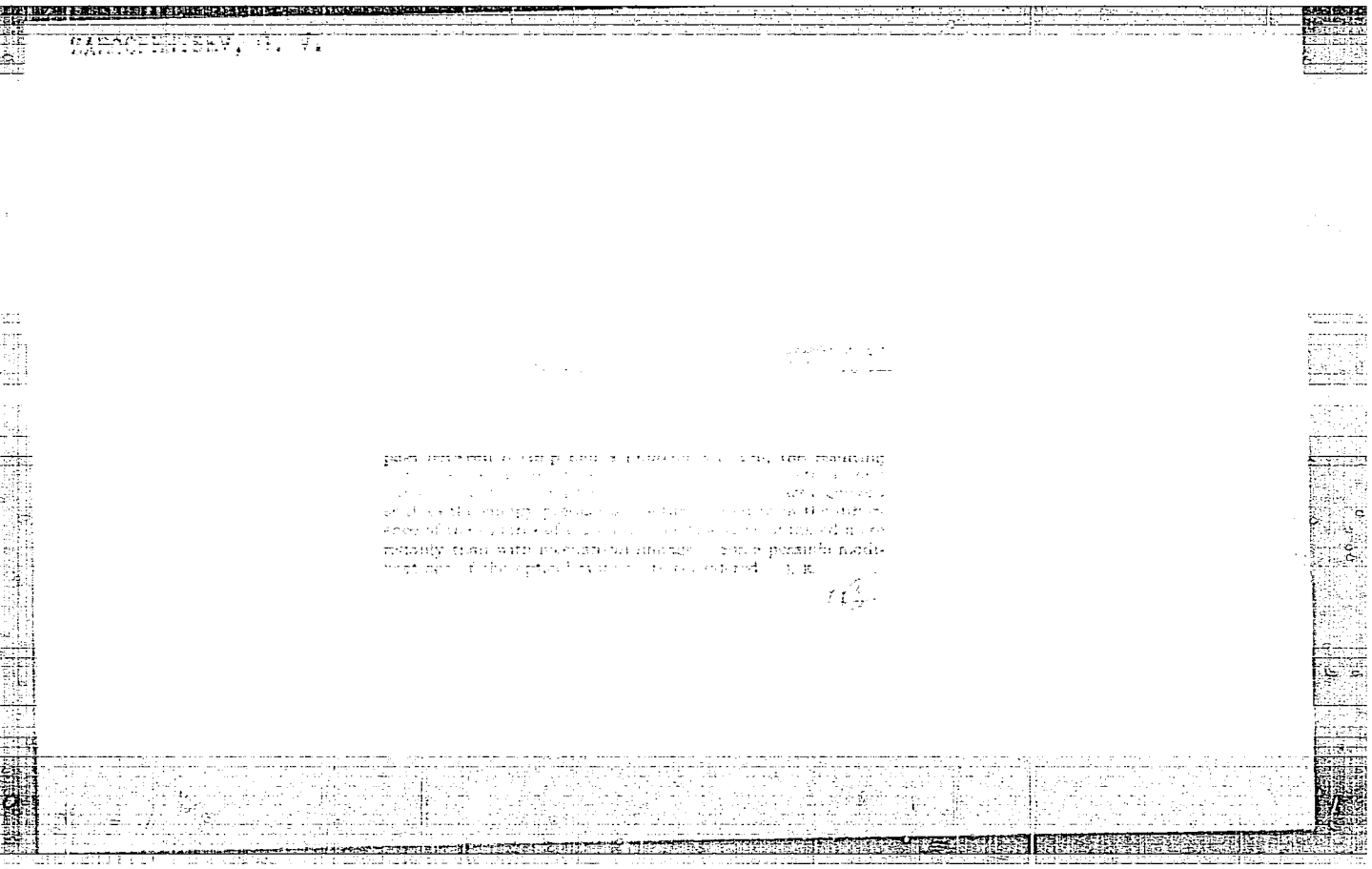
ZAROCHENTSEV, G.V., kand. tekhn. nauk; KOZHEVNIKOV, G.I., inzh.

Ultrasonic and magnetic testing methods for determining the quality parameters of rail hard-facing. Trudy TSNII MPS no.243: 104-130 '62. (MIRA 16:6)

(Railroads—Rails—Testing)
(Ultrasonic testing)
(Magnetic testing)



APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963830003-8"



VLASOV, V.I., kand. tekhn. nauk; ZAROCHENTSEV, G.V.

Testing of the structure of the metal of spring suspension rolls for electric locomotives. Vest. TSNII MPS 23 no.5:34-36 '64. (MIRA 17:11)

1 B8

ACCESSION NR: AP4039638 S/0181/64/006/006/1579/1588

AUTHORS: Zarochentsev, Ye. V.; Popov, V. A.

TITLE: Ground states of biaxial antiferromagnetic material

SOURCE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1579-1588

TOPIC TAGS: antiferromagnetic material, antiferromagnetism, anisotropic medium, magnetization, magnetic property

ABSTRACT: The ground states of a biaxial antiferromagnetic dielectric are found and compared with the ground states in the uniaxial case. The phenomenological Hamiltonian is written for a biaxial antiferromagnetic, a system of magnetic atoms which is divided into two magnetic sublattices. From this the ground state energy density is given by

$$E_0 = \delta(\mathbf{M}_{10}, \mathbf{M}_{20}) + \frac{1}{2}\beta(M_{10x}^2 + M_{20x}^2) + \beta_1 M_{10x} M_{20x} + \frac{1}{2}\rho(M_{10y}^2 + M_{20y}^2) + \rho_1 M_{10y} M_{20y} - (\mathbf{M}_{10} + \mathbf{M}_{20}, \mathbf{H}),$$

where M_{10} is the magnetization of the i-th sublattice in the ground state, δ is

Card 1/3

the constant of the exchange interaction between sublattices, $\beta, \beta_1, \rho, \rho_1$ are constants of the magnetic anisotropy, and H is the constant uniform external magnetic field. Minimizing E_0 as a function of the orientation of M_{10} leads to the determination of the antiferromagnetic ground states as a function of the magnetic field H and of the properties of the crystal magnetic anisotropy. For H = 0 there are three types of antiferromagnetics; A^z, A^x and A^y for which

$$\beta-\beta_1>0,\ \rho-\rho_1>0;$$

$$\beta-\beta_1<0,\ \beta-\beta_1<\rho-\rho_1;$$

and

$$\rho-\rho_1<0,\ \rho-\rho_1<\beta-\beta_1;$$

respectively. In the ground state M_{10} and M_{20} are antiparallel and directed along the Oz, Ox, and Oy axes (edges c, a, and b of the rhombic magnetic cell) respectively. For H ≠ 0 each of the three types can be subdivided into 10 cases which

ACCESSION NR: AP4039638

are discussed in detail. The authors thank A. I. Akhiyezer and V. G. Bar'yakhtar for discussion of the results and valuable advice. Orig. art. has: 50 equations, 33 diagrams, and 3 tables.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur, Kharkhov Gosuniversitet, Rostov-na-Donu (Physicotechnical Institute of Low-Temperature, Kharkov State University)

SUBMITTED: 08Oct63 DATE ACQ: 19Jun64 ENCL: 00

SUB CODE: SS, EM NO REF SOV: 003 OTHER: 001

Card 3/3

ACCESSION NR: AP4043376 S/0181/64/006/008/2489/2494

AUTHORS: Zarochentsev, Ye. V.; Popov, V. A.

TITLE: Energy spectra and resonant frequencies of biaxial antiferromagnet

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2489--2494

TOPIC TAGS: antiferromagnetism, spin wave theory, magnetic anisotropy, energy distribution, resonant state, copper compound

ABSTRACT: The authors have shown earlier (FTT, v. 6, 1579, 1964) that antiferromagnets with biaxial magnetic anisotropy exist and include $CuCl_2 \cdot 2A_2O$ and $CuSa_4$. In the present article they calculate the energy spectrum of the elementary spin excitations (spin waves) of such an antiferromagnet using the phenomenological theory of spin waves, which is applicable to spin-system states close to the ground

Card 1/2

ACCESSION NR: AP4043376

state. The properties of the antiferromagnetic resonance frequencies are also investigated. The results are compared with the uniaxial case. The expressions obtained for the resonance frequencies in $CuCl_2 \cdot 2A_2O$ are in satisfactory agreement with those of H. J. Gerritsen (Physica, v. 21, 693, 1955). "The authors thank A. I. Akhiyezer and V. G. Bar'yakhtar for a discussion of the work and for valuable advice." Orig. art. has: 22 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur AN UkrSSR, Khar'kov (Physicotechnical Institute of Low Temperatures, AN UkrSSR)

SUBMITTED: 22Feb64 ENCL: 00

SUB CODE: SS NR REF SOV: 22Feb64 OTHER: 002

Card 2/2

ZAROCHENTSEV, Ye.V. [Zarochentsev, IE.V.]; POPOV, V.A. [Popov, V.O.]

Energy spectra and resonance frequencies of biaxial antiferromagnets. Ukr. fiz. zhur. 10 no.4:368-381 Ap '65. (MIRA 18:5)

1. Fiziko-tekhnicheskiy institut nizkikh temperatur AN UkrSSR, Khar'kov.

ZARODOV, PAVEL VASIL'YEVICH

EPP.
.R92419

ZARODOV, PAVEL VASIL'YEVICH,

OPYT EKONOMII BENZINA NA AVTOBUSAKH (EXPERIENCE IN THE ECONOMY OF GASOLINE IN BUSSES) MOSKVA, AVTOTRANSIZDAT, 1955.

26 P. DIAGRS., TABLES.

ZARODOV, Pavel Vasil'yevich; SMELYANSKIY,V.A., redaktor; GALAKTIONOVA, Ye.N., tekhnicheskiy redaktor

[Economizing gas on motorbuses] Opyt ekonomii benzina na avtobusakh. Moskva, Nauchno-tekhn. izd-vo avtotransportnoi lit-ry, 1955. 26 p. (MLRA 9:2)

1. Shofer 29-y avtokolonny Leningradskogo gruzovogo avtotresta (for Zarodov)

(Gasoline) (Motorbuses)

ZARODINA, A. G.; PERMINOV, T. A.;

'Concerning the Elimination of Protein Opalescence in Mallein," Trudy Nauchno-kontrol'nogo Instituta Veterinarnykh Preparatove, Moscow, Vol 3, 1953, pp 89-91.

S/902/62/000/000/002/015
E195/E385

AUTHORS: Zaroshchinskiy, M.L. and Nikitin, G.S.

TITLE: Resistance to deformation during rolling of alloys with a high strength at elevated temperatures

SOURCE: Novyye protsessy obrabotki metallov davleniyem; doklady Soveshch. po novym prots. obrab. met. davleniyem v mashinostr., 1960. Ed. by V. D. Golovlev. Moscow, Izd-vo AN SSSR, 1962. 44 - 48

TEXT: Alloys with high strength at elevated temperatures are at present rolled on equipment used normally for rolling constructional steels. As a result, the equipment is often overloaded and damaged. The optimum rolling conditions cannot be determined without knowing the strength of the metal at the rolling temperature - hence the present investigation conducted on the following alloys: ЭР (ER)-18, ЭР-9, ЭИ (EI)-661, EI-867, EI-929, EI-827, EI-826, ЭОХГСА (EOKhGSA), ЭП708С2МА (EP708S2MA), ЭИ [illegible] (EIA), ЭИ [illegible] (EIG), EI-435, ЭИ [illegible] (ESVKh20N10G6(678)), ЭИ [illegible] (Kh20N80), ЭИ-211 (ЭИ 20Н14С2) (EI-211 (EKh20N14S2)) and EI-602.

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S/902/62/000/000/002/015
E193/E383

Resistance to ....

Measurements of the roll force P were conducted on ingots weighing from 90 - 450 kg with cross-sections ranging from 130 x 130 mm to 190 x 230 mm. These were rolled hot (1 130 - 1 050 °C) on multi-groove rolls, the reduction from the initial dimensions to the final size (usually 90 x 90 mm) being attained in 7 - 19 passes. The roll pressure was measured in each pass, the measurements being repeated at least 10 times for each alloy. The experimental values of P were used to assess the resistance of the alloys studied to deformation by plotting the average roll pressure P_{cp} (kg/mm^2) as a function of the ℓ/h_{cp} ratio, where ℓ is the length of the deformation region in a given pass (calculated or, in some cases, determined experimentally) and h_{cp} is the arithmetical mean of the thickness of the specimen before entering and after leaving the pass. The graphs are reproduced in Figs. 3 and 4. The results shown in Fig. 3 relate to alloys indicated by each curve. The curves in Fig. 4 relate to the following alloys: 1 - EI-435 (rolling temperature t = 1150 - 1100 °C) ; 2 - 3Kh20N80 (EKh20N80) (t = 1100 - 1050 °C); 3 - EI-211 (t = 1080 - 1050 °C); 4 - ESVKh20N10G6 (t = 1050 - 1030 °C); 5 - 30KhGSA (t = 1050-1030 °C);

Card 2/4

S/902/62/000/003/002/015
E193/E383

Resistance to ....

6 - E708ZKhA ($t = 1050 - 1030\ ^{\circ}C$); 7 - 65G ($t = 1070 - 1030\ ^{\circ}C$); 8 - U8A ($t = 1060 - 1030\ ^{\circ}C$). It will be seen that the minima of curves reproduced in Figs. 3 and 4 are, respectively, at ℓ/h_{cp} of approximately 0.5 and 0.6-0.7; this difference is associated with different friction coefficients of the two groups of alloys. The position of the curve for each alloy in relation to the P_{cp} axis is determined by its resistance to uniaxial deformation at a given temperature, deformation rate and the reduction attained. The results obtained indicate that the optimum conditions for rolling the alloys studied correspond to the values of ℓ/h_{cp} in the 0.4 - 0.7 interval. The $P_{cp} = f\ (\ell/h_{cp})$ curves obtained in the course of the present study can be used to calculate the roll pressure in rolling on rolls other than those used by the present authors, provided that there is no, or very little, lateral spread. There are 4 figures and 1 table.

Card 3/4

ZARODZINSKIY, Z.K., inzhener

New cooperage lathe. Der.prom. 4 no.4:16-17 Ap '55. (MLRA 8:6)

1. Nauchno-issledovatel'skiy institut derevoobrabatyvayushchikh mashin.
(Coopers and cooperages) (Lathes)

ZARODZINSKIY, Z.K., inzhener

Flat polishing machine PP-2. Der.prom. 4 no.8:13-14 Ag '55. (MLRA 8:10)

1. Nauchno-issledovatel'skiy institut derevoobrabatyvayushchego mashinostroyeniya

(Woodworking machinery)

BUKHTIYAROV, Viktor Pavlovich, kand. tekhn.nauk; ZARODZINSKIY, Z.K., red.; GOSPODARSKAYA, T.N., red. izdpva; VDOVINA, V.M., tekhn. red.

[Automation of the processing of dimension stock by planing] Avtomatizatsiia obrabotki bruskovykh zagotovok strоganiem. Moskva, Goslesbumizdat, 1963. 95 p. (MIRA 16:7)

(Automation) (Planing machines)

AFANAS'YEV, Pavel Semenovich, kand. tekhn. nauk; BURKOV, V.I., inzh., retsenzent; ZARODZINSKIY, Z.K., inzh., red.; KARINSKIY, S.A., inzh., red.; LEYN, E.A., kand. tekhn. nauk, red.; NOVIKOV, D.Z., kand. tekhn. nauk, red.; OBRAZTSOV, S.A., inzh., red.; RUDNIK, M.S., kand. tekhn. nauk, red.; SAZONOV, A.G., inzh., red. izd-va; TIKHONOV, A.Ya., tekhn. red.

[Woodworking machinery]Derevoobrabatyvaiushchie mashiny; spravochnik. Moskva, Mashgiz, 1962. 575 p. (MIRA 15:12)
(Woodworking machinery)

ZARODZINSKIY, Z.K., inzhener.

The NTD cutting machine. Der.prom.5 no.7:16 Jl '56. (MLRA 9:9)

1.Nauchno-issledovatel'skiy institut derevoobrabatyvayushchego mashinostroyeniya.
(Woodworking machinery)

ZAROGUCHENKO, V. A. (Odessa Institute of naval engineers)

"Results of research on composition of equation of state and determination of thermodynamic properties of natural gases and their basic constituents."

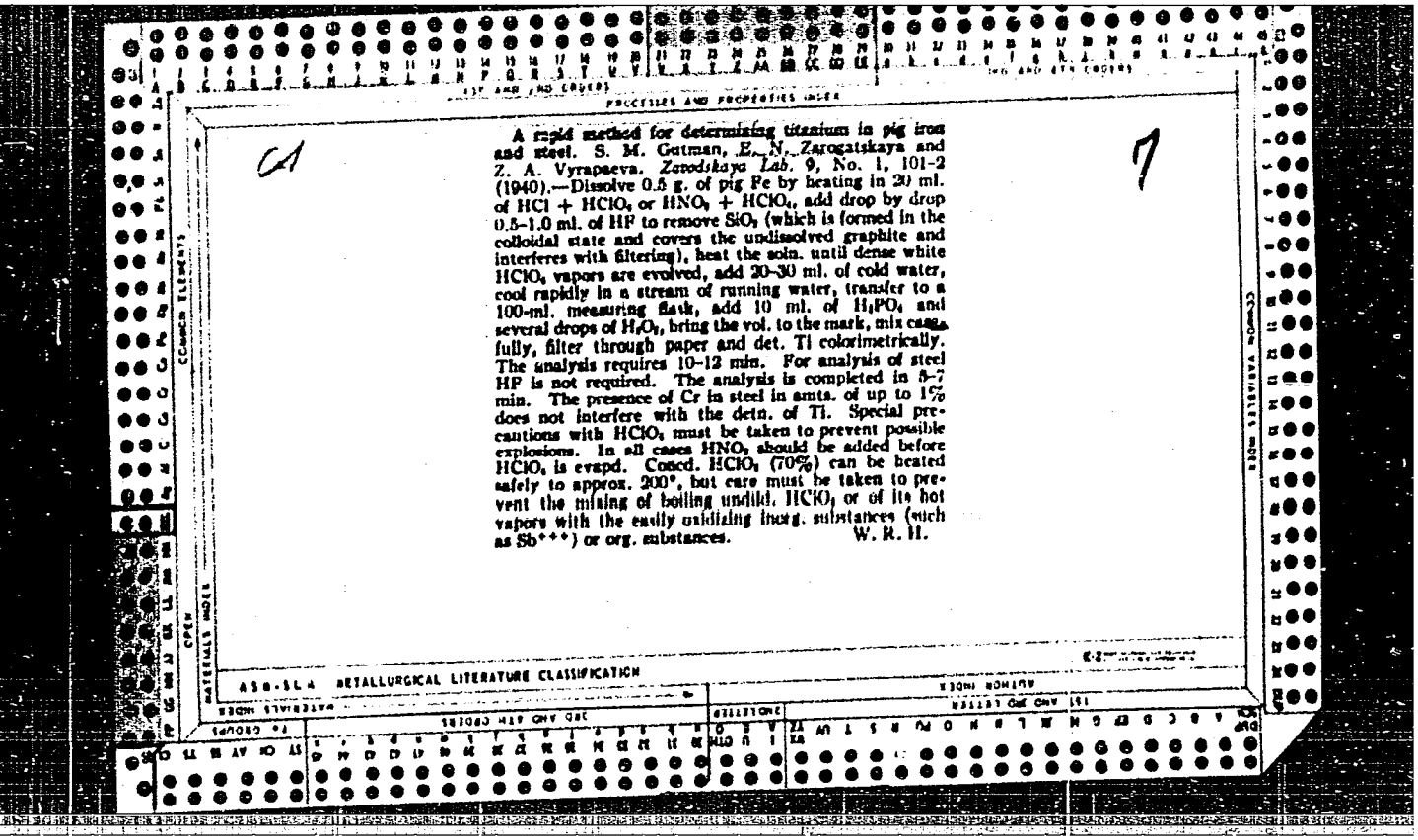
Report presented at the Section on Thermal-physical Properties and Non-stationary Thermal Capacity, Scientific Session, Council of Acad. Sci. Ukr SSR on High Temperature Physics, Kiev, 2-4 Apr 1963.

Reported in Teplofizika Vysokikh temperatur, No. 2, Sep-Oct 1963, p. 321, JPRS 24,651. 19 May 1964.

ZARON, Wiktor, mgr inz.

Miniature switchboard panels. Energetyka Pol 14 no.5:145-149 My '60. (EEAI 9:10)

1. Energoprojekt, Oddzial w Krakowie.
(Electric switchgear)



A rapid method for determining titanium in pig iron and steel. S. M. Gutman, E. N. Zarogatskaya and Z. A. Vyrapaeva. *Zavodskaya Lab.* 9, No. 1, 101-2 (1940).—Dissolve 0.5 g. of pig Fe by heating in 20 ml. of HCl + $HClO_4$ or HNO_3 + $HClO_4$, add drop by drop 0.5–1.0 ml. of HF to remove SiO_2 (which is formed in the colloidal state and covers the undissolved graphite and interferes with filtering), heat the soln. until dense white $HClO_4$ vapors are evolved, add 20–30 ml. of cold water, cool rapidly in a stream of running water, transfer to a 100-ml. measuring flask, add 10 ml. of H_3PO_4 and several drops of H_2O_2, bring the vol. to the mark, mix carefully, filter through paper and det. Ti colorimetrically. The analysis requires 10–12 min. For analysis of steel HF is not required. The analysis is completed in 5–7 min. The presence of Cr in steel in amts. of up to 1% does not interfere with the detn. of Ti. Special precautions with $HClO_4$ must be taken to prevent possible explosions. In all cases HNO_3 should be added before $HClO_4$ is evapd. Concd. $HClO_4$ (70%) can be heated safely to approx. 200°, but care must be taken to prevent the mixing of boiling undild. $HClO_4$ or of its hot vapors with the easily oxidizing inorg. substances (such as Sb^{+++}) or org. substances. W. R. H.

KORYTNYY, D.M.; ZARDKHOVICH, A.A., kand. tekhn.nauk, retsenzent; LESNICHENKO, I.I., red.izd-va; GORDEYEVA, L.P., tekhn.red.

[Cutters] Frezy. Moskva, Mashgiz, 1963. 118 p. (MIRA 16:9)

(Metal-cutting tools)

RATMIROV, V.A., kand. tekhn. nauk; ZAROKHOVICH, A.Ye., kand. tekhn. nauk; KABELAN, S.I., inzh., red.; SOSINA, A.L., tekhn. red.

[Inventions; electromechanical engineering]Sbornik izobretenii; elektromashinostroenie. Moskva, TSentr.biuro tekhn. informatsii, 1962. 299 p. (MIRA 15:10)

1. Russia (1923- U.S.S.R.)Komitet po delam izobreteniy i otkrytiy.

(Electric machinery—Patents)

GUMINSKI, Jerzy, mgr inz.; ZARON, Wiktor, mgr inz.

Relay protection and automatic reclosing of the Polish 400 kv transmission system. Przegl elektrotechn 39 no.9:339-345 S '63.

1. Instytut Energetyki, Warszawa (for Guminski). 2. Energoprojekt, Oddzial, Krakow (for Zaron).

ZARON, Wiktor, mgr inz.

Relay protection devices and automation in transformer substations simplified up to 110 kv. Przegl elektrotechn 40 no.9:406-408 S '64.

1. Energoprojekt, Krakow.

FINTESCU, Dan, ing. (Bucuresti); DAN, Ion, ing. (Bucuresti); ZARONI, Romulus, ing. (Bucuresti); LAPEDATU, Elena, ing. (Bucuresti)

Automation drive with direct current motors for drilling equipment. Electrotehnica 11 no.8:299-309 Ag '63.

1. Sef de laborator la Institutul de Cercetari Electrotehnice (for Fintescu). 2. Cercetator principal la Institutul de Cercetari Electrotehnice (for Dan, Zaroni, Lapedatu).

FINTESCU, Dan; ZARONI, Romulus

Automation equipment for electrofilters. Probleme automatiz 89-101 5 N '62.

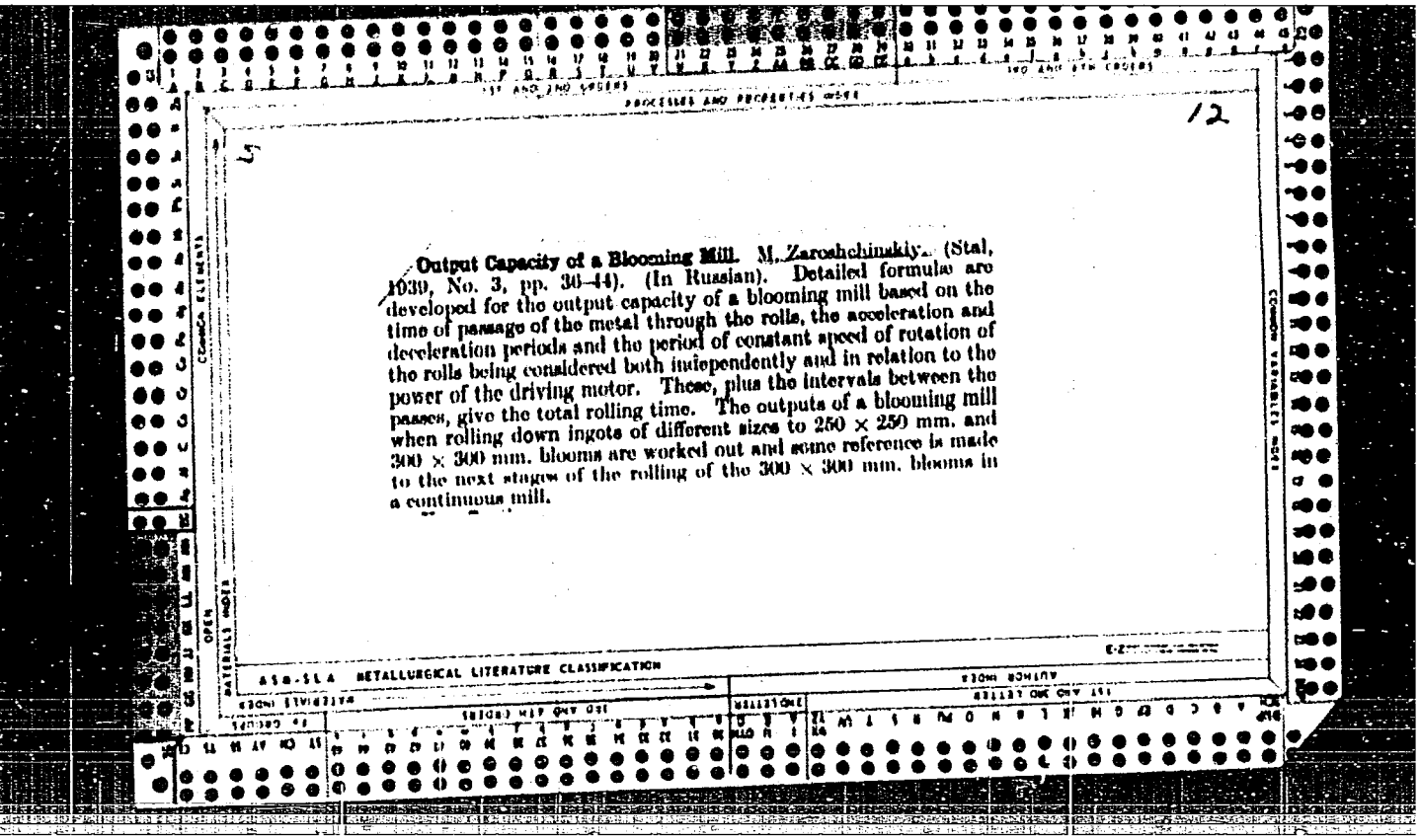
FINTESCU, Dan, ing. (Bucuresti); ZARONI, Romulus, ing. (Bucuresti); SERBANESCU, Bianca, ing. (Bucuresti); HERLEA, Apolador, ing. (Bucuresti); LAPEDATU, Elena, ing. (Bucuresti)

Electric equipemnt for electrofilters. Electrotehnica 11 no.9: 333-343 S'63.

1. Sef al laboratorului de actionari electrice al Institutului de cercetari electrotehnice (for Fintescu). 2. Cercetator principal la laboratorul de actionari electrice al Institutului de cercetari electrotehnice (for Zaroni). 3. Cercetator la laboratorul de actionari electrice al Institutului de cercetari electrotehnice (for Serbanescu, Herlea, Lapedatu).

ZAROSCINSKI, M.L. [Zaroshchinskiy, M.L.], prof. dr. in stiinte tehnice

A new type of continuous billet rolling mill. Metalurgia constr mas 14 no.8:760-761 Ag '62.



12

Output Capacity of a Blooming Mill. M. Zaroshchinskiy. (Stal, 1939, No. 3, pp. 30–44). (In Russian). Detailed formulæ are developed for the output capacity of a blooming mill based on the time of passage of the metal through the rolls, the acceleration and deceleration periods and the period of constant speed of rotation of the rolls being considered both independently and in relation to the power of the driving motor. These, plus the intervals between the passes, give the total rolling time. The outputs of a blooming mill when rolling down ingots of different sizes to 250 × 250 mm. and 300 × 300 mm. blooms are worked out and some reference is made to the next stages of the rolling of the 300 × 300 mm. blooms in a continuous mill.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ZAROSHCHINSKIY, M.L., doktor tekhn.nauk, prof.

Relationship between stresses and deformation in longitudinal metal rolling. Izv.vys.ucheb.zav.; mashinostr. no.8:212-218 '63. (MIRA 16:11)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche imeni Baumana.

ZAROSHCHINSKIY, M.L., doktor tekhn.nauk, prof.

Analysis of the development of sheet mills in foreign countries. (MIRA 15:12)
Stal' 22 no.12:1092-1095 D '62.

1. Moskovskoye vysshoye tekhnicheskoye uchilishche im. Baumana.
(Rolling mills)

ZALOSHCHINSKIY, M.L., prof., doktor tekhn.nauk

Developments in the design of blooming and billet mills. Stal' 20 no.6:523-530 Je '60. (MIRA 14:2)

1. Moskovskoye vysshoye tekhnicheskoye uchilishche im. Baumana.
(Rolling mills)

ZAROSHCHINSKIY, M.L., doktor tekhn.nauk, prof.; LUGOVSKOY, V.M., inzh.

Some works on the theory and technological processes of metal rolling. Izv.vys.ucheb.zav.; mashinostr. no.8:102-106 '61. (MIRA 15:1)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni Baumana.
(Rolling (Metalwork))

ZAROSHCHINSKIY, Mikhail Leont'yevich; POLUKHIN, P.I., prof., doktor tekhn. nauk, retsenzent; GROMOV, N.P., prof., retsenzent; FEDOSOV, N.M., prof., retsenzent; VAGIN, A.A., red. izd-va; DOBUZHINSKAYA, L.V., tekhn. red.

[Technological principles of rolling mill design]Tekhnologicheskie osnovy proektirovaniia prokatnykh stanov. Moskva, Metallurgizdat, 1962. 443 p. (MIRA 15:12)
(Rolling mills--Design and construction)

ZAROSHCHINSKIY, M.L., doktor tekhn. nauk, prof.

Determining metal pressure on rolls in longitudinal rolling. Izv. vys. ucheb. zav.; mashinostr. no.9:209-216 '63. (MIRA 17:3)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche imeni Baumana.

ZAROSHCHINSKIY, M.L., doktor tekhn.nauk, prof.

Determining the pressure of metals on rolls in hot rolling. Izv.vys.-ucheb.zav.; mashinostr. no.8:107-120 '61. (MIRA 15:1)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni Baumana.
(Rolling (Metalwork))

ZAROSHCHINSKY, M.L., doktor tekhn.nauk, prof.; NIKITIN, G.S., assistent; SINEL'NIKOV, Yu.I., assistent

Determining energy and power parameters in rolling special alloy sheets. Izv.vys.ucheb.zav.; mashinostr. no.10:168-179 '61. (MIRA 14:12)

1. Moskovskoye vysshoye tekhnicheskoye uchilishche imeni Baumana.

(Rolling(Metalwork))

ZAROSHCHINSKIY, M.L., prof., doktor tekhn.nauk

Type of continuous blooming mill. Stal' 22 no.2:140-141 F '62. (MIRA 15:2)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche im. Baumana.

(Rolling mills)

ZAROSHCHINSKIY, M.L., doktor tekhn.nauk

Gripping of the strip by rolls in rolling. Obr.met.davl. no.2: 5-12 '53. (MIRA 12:10)
(Rolling (Metalwork))

ZAROSHCHINSKIY, M.L., doktor tekhn.nauk

Metal deformation during its rolling on a blooming mill. Obr. met.davl. no.2:93-100 '53. (MIRA 12:10)
(Rolling (Metalwork)) (Deformations (Mechanics))

137-58-6-12138

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 137 (USSR)

AUTHOR: Zaroshchinskiy, M.L.

TITLE: Changes in the Shape of a Strip Passing Through Plain Rolls (Izmeneniye formy polosy pri prokatke v gladkikh valkakh)

PERIODICAL: V sb.: Prokatn. stany i tekhnol. prokatki. (MVTU, 80). Moscow, Mashgiz, 1957, pp 35-49

ABSTRACT: Both the process of compression of prismatic bodies between parallel and inclined plates and the process of rolling of metal through plain rolls exhibit certain common characteristics so far as the nature of the changes of shape are concerned. An inclined position of the compression planes results in a displacement of the plane of symmetry toward the boundary. The contour of a specimen after a static upsetting process is identical to the contour of the leading edge of a strip that is being subjected to reduction in the rolls of a mill; if the axis of the rolling process coincides with the longitudinal axis of the center of deformation (D), then the frontal edge of the strip becomes concave at small degrees of reduction, whereas it becomes convex in the case of larger reduction, starting at the

Changes in the Shape of a Strip Passing Through Plain Rolls

leading edge, the width of the contact surface (S) decreases at first, at the expense of projections which are formed at this stage, and then increases again. A similar shape of the contact surface is also obtained in the case of a "narrow" D center. In the case of a "wide" center, the front edge of the contact S is convex, while the width of the contact S is reduced in the majority of cases (with the exception of extremely severe reductions). The width of the leading end of the strip, after it has left the rolls, remains almost constant. One should differentiate between the neutral angle which determines the location of the neutral cross section between the leading and the lagging zone, and the lead angle which determines the position of the boundary of the zone of adhesion. Only in the absence of the latter is the lead angle equal to the neutral angle. Upon the removal of the roller pressure from the center of D, the shape of the contact S is similar to the shape of the leading end of the strip. These considerations of the shape of the strip are illustrated by examples taken from shop practice and from experimental data obtained in laboratory investigations. It is on the strength of these data that the author criticizes I.I. Pavlov's theory of rigid margins and asserts that the shape of the leading end of the strip is formed prior to the formation of marginal portions of it and that the ratio of the dimensions of the leading end is determined by the width-to-length ratio of the D center during the period

137-58-6-12138

Changes in the Shape of a Strip Passing Through Plain Rolls

of filling in, as well as by the shape changes in the strip during the transition from the first to the second stage of the rolling operation.

Yu.F.

1. Metals--Processing 2. Metals--Deformation 3. Mathematics--Applications

Card 3/3

ZAROSHCHINSKY, M.L.

25 (1) hh 4 +3 PHASE I BOOK EXPLOITATION SOV/292

Moscow. Vyssheye tekhnicheskoye uchilishche. Kafredra "Mashiny i tekhnologiya prokatki i volocheniya"

Prokatnyye stany i tekhnologiya prokatki; sbornik statey (Rolling Mills and Methods of Rolling; Collection of Articles) Moscow, Mashgiz, 1957. 125 p. (Series: Moscow. Vyssheye tekhnicheskoye uchilishche. /Trudy/ vyp. 80) 4,000 copies printed.

Ed.: M.L. Zaroshchinskiy, Doctor of Technical Sciences, Professor; Tech. Ed.: Ye.N. Matveyeva; Managing Ed. for Literature on Heavy Machine Building: Ya.S. Golovin, Engineer.

PURPOSE: This collection of articles is intended for the personnel of scientific research institutes, engineers, designers, teachers and students specializing in rolling methods and the building of rolling mill machinery.

COVERAGE: Theoretical and experimental studies done by the scientific workers of the department of "Machinery and methods of rolling and drawing" of MVTU (Moscow Higher Technical School) imeni Bauman are published in this collection.

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The articles deal with the following topics: spreading of stock in rolling and distribution of stresses and spread along the width of the stock, resistance to deformation in metal forming, change of the form of the strip depending on dimensions of the contact area in rolling in plain rolls; the theory of elastoplastic bending of a strip during straightening on a multiroll machine, investigation of basic parameters characterizing the resistance of material to rolling; simplified formula for spreading, and measuring unit pressure along the arc of contact using strain gages. No personalities are mentioned. There are 41 references, 39 Soviet and 2 English.

TABLE OF CONTENTS:

Rolling Mills and Methods of Rolling SOV/292

AVAILABLE: Library of Congress

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5/25/59

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ZAROSHCHINSKIY, M.L., doktor tekhn.nauk, prof.

Deformation of the metal during rolling on blooming mills.
[Trudy] MVTU no.84:32-46 '58. (MIRA 12:5)
(Rolling (Metalwork)) (Deformations (Mechanics))

SOV/133-59-5-15/31

AUTHORS: Zaroshchinskiy, M.L., Doctor of Technical Sciences, Professor and Grishkov, A.I., Engineer

TITLE: The Influence of the Velocity of Deformation During Rolling on the Distribution of Specific Pressure (Vliyaniye skorosti deformatsii pri prokatke na raspredeleniye udel'nogo davleniya)

PERIODICAL: Stal', 1959, Nr 5, pp 433 - 436 (USSR)

ABSTRACT: The influence of various factors (external friction, external zones and velocity of deformation) on the distribution of specific pressure along the arc of bite and along the width of the strip is discussed. Theoretical considerations are compared with experimental measurements during hot rolling under conditions $l/h_{mean} = 1$ and $l/h_{mean} = 2$. The calculated and experimentally determined curves of the distribution of specific pressure were found to coincide (Figure 3). It is concluded that when the mean height of the rolled strip is approximately equal to the arc of bite the velocity of deformation has the main influence on the

Card1/2

The Influence of the Velocity of Deformation During Rolling on the Distribution of Specific Pressure

distribution of specific pressure along the arc of bite. There are 3 figures and 13 references, 11 of which are Soviet, 1 English and 1 German.

ASSOCIATIONS: MVTU and TsNIICHM

25(1) PHASE I BOOK EXPLOITATION SOV/1888

Moscow. Vysshaye tekhnicheskoye uchilishche

Prokatnyye stany i tekhnologiya prokatki; sbornik statey (Rolling Mills and Processing by Rolling; Collection of Articles) Moscow, Mashgiz, 1958. 208 p. (Series: Its: [Trudy] 84) Errata slip inserted. 3,000 copies printed.

Ed.: A.I. Tselikov, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: L.A. Osipova; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on Heavy Machine Building (Mashgiz): S.Ya. Golovin, Engineer.

PURPOSE: This collection of articles is intended for workers of scientific-research institutes and plants, teachers, aspirants, and students specializing in the field of rolling mill engineering.

COVERAGE: This book is composed of theoretical and experimental works and proceedings presented at MVTU imeni Baumana (Moscow Higher Technical School imeni N.Ye. Bauman) by the Department of Machinery and Processes of Rolling and Drawing. It covers the theory of rolling and manufacturing methods described as new. The articles deal with the problem of determining forces in a planetary mill, the study of the

Card 1/5

process of metal deformation on plain and shaped rolls, continuous cold rolling of pipe, and methods of selecting tools and fixtures for new mills. No personalities are mentioned. References follow each article.

TABLE OF CONTENTS:

Burdin, V.M., Engineer. Cold Rolling of Thin-walled Steel Tubes on a Long Mandrel 185

The author presents the results of an investigation concerned with the cold rolling of tubes on a long mandrel. 16,33, and 38 mm. carbon steel tubes, and 15 and 16 mm. stainless steel tubes with various ratios of diameter to wall thickness were rolled in the same stand, while 16 mm. tubes were rolled continuously in six stands. Pass design is described; reduction regimes for various tube sizes are determined; and the results of an investigation on the selection of material for rolls and mandrels are presented.

AVAILABLE: Library of Congress

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8-11-59

ZAROSHCHINSKIY, M.L.

GINTSBURG, Ya.S.; ANDRATSKIY, K.K.: PROTASOV, A.A., inzh., retsenzent; DZUGUTOV, M.Ya., inzh., retsenzent; ZAROSHCHINSKIY, M.L., prof. doktor tekhn.nauk, red.; GORDON, L.M., red.izd-va; PETROVA, N.S., tekhn.red.

[Rolling high-grade steel] Prokatka kachestvennoi stali. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1953. 464 p. (MIRA 11:6)
(Rolling (Metalwork))

ZAROSHCHINSKIY, M.L., doktor tekhn. nauk prof.

Creep of metals rolled by smooth rolls. [Trudy] TSNIITMASH 73:202-216 '55. (MIRA 11:3)

(Rolling (Metalwork)) (Creep of metals)

ZAROSHCHINSKIY, M.L., doktor tekhn.nauk, prof.

Changes in the form of the strip during passage between plain rolls. [Trudy] MVTU no.80:35-49 '57. (MIRA 10:12)
(Rolling (Metalwork)) (Rheology)

ZAROSHCHINSKIY, M. L.

Prokatka stali. Dop.... v kachestve uchebnika dlia metallurgicheskikh vuzov. Moskva, Metallurgizdat, 1948. 451 p. illus.

Rolling of steel.

DLC: TS340.Z3

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

ZAROSHCHINSKIY, M. L. and others.

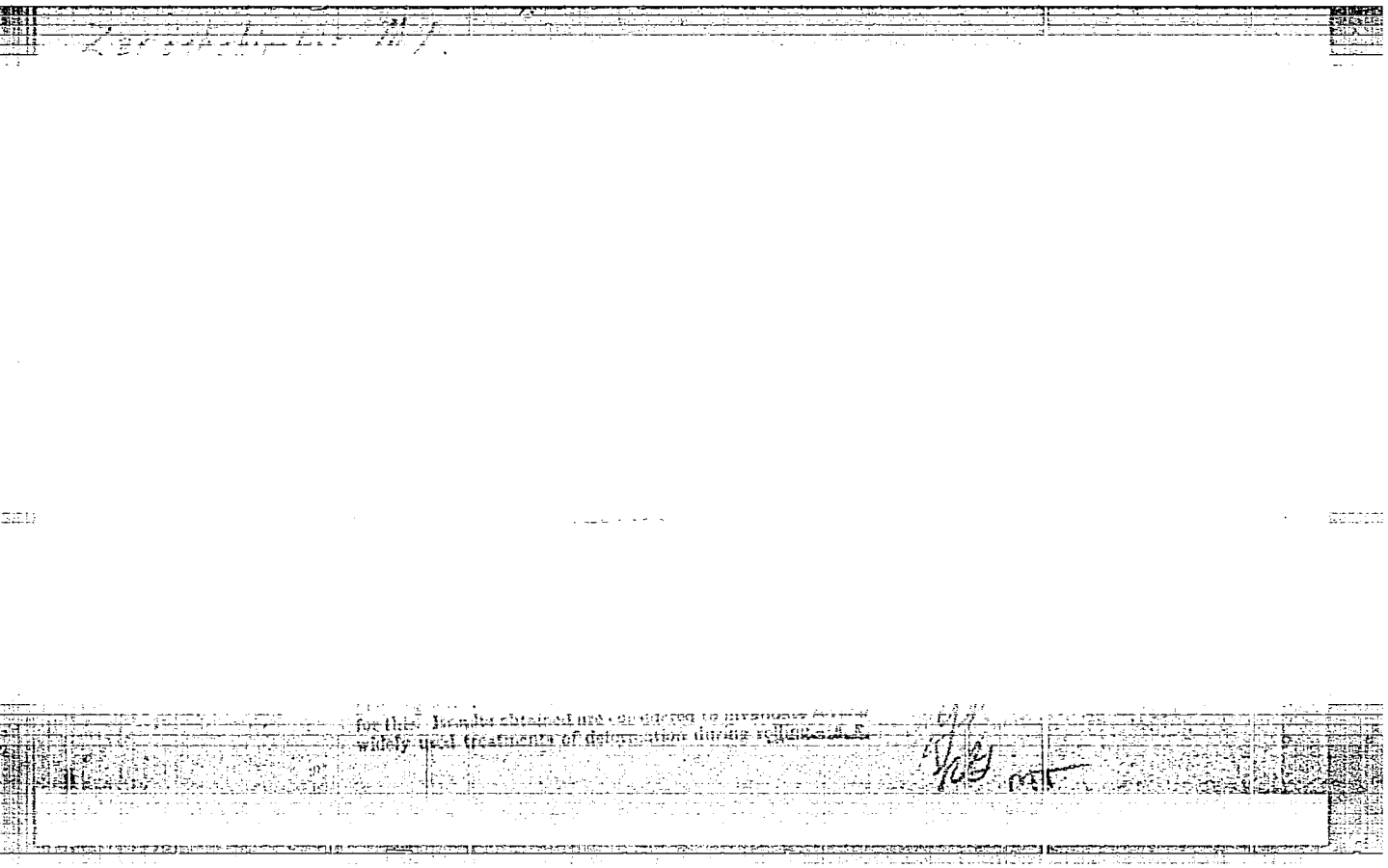
Prokatnye stany; kharakteristika i raspolozhenie oborudovania. Pod red. A. I. Tselikova. Moskva, Mashgiz, 1950. 123 p. diagrs.

Bibliography: p. 122

Rolling mills; characteristics and layout of equipment.

DLC: TS340.Z32

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.



ZAROSHCHINSKIY, M. L.

USSR/Academy of Sciences
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"Annotations on Works Published in 1948 by Academiecians and Corresponding Members of the Academy of Sciences and Other Scientific Workers of the Department of Technical Sciences, Academy of Sciences" 4 pp

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 4

Includes I. V. Abramov's book, "Methods of Technological Progress in Soviet Machine Construction," M. Yu. Bal'shin's book, "Powder Metallurgy," M. L. Zaroshchinskiy's "Steel Rolling," "Dynamics and Durability of Crankshafts" (collection of articles edited by S. V. Serensen), and A. V. Gorinov's 3-volume work, "Railroad Design."

PA 45/49T6

ZAROSHCHINSKIY, M.L., doktor tekhnicheskikh nauk, professor.

Problems in the theory of shaping of metals by compression. [Trudy] MVTU no.62:14-36 '55. (MIRA 9:7)
(Metals--Cold working)

ZAROSHCHINSKIY, M. L.

The rolling of steel; textbook. Moskva, Gos. nauch.-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallur-gii, 1948. 451 p. (50-25558)

TS340.Z3

ZAROSHCHINSKIY, M. L.

"Studies of Expansion Caused by Rolling Steel," Stal', No 11, 1949.

ZAROSHCHINSKIY, M. L.

Rolling mills. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1950. 123 p. (50-39427)

TS340.Z32

ZAROSHCHINSKIY, M. L.

"Further Development of Fundamental Requirements of the Theory of Rolling in Smooth Rolls." Sub 13 Mar 51, Inst of Metallurgy imeni A. A. Baykov.

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55.

TSELIKOV, A. I.; ZAROSHCHINSKIY, M. L.; MARMARSHTEYN, L. V.; MUZALEVSKIY, O. G.

Review of Ig. M. Pavlov's book - "The Theory of Rolling"

Vest Mash p. 90, Oct 51

ZARUBINSKIY, N. L.

"The Development of Rolling Mill Equipment," Stal', No. 9, 1948; Docent, Inst. of Metal, Acad. Sci. USSR. -c1948-.

ZAROSHCHINSKIY, M. L.

Zaroshchinskiy, M. L., "Studies of Expansion Caused by Rolling Steel," Stal', No11, 1949.

ZAROSHCHINSKIY, M. L.

Pavlov, I. M.

Theory of rolling. M. Pavlov. Reviewed by A. I. TSelikov, M. L. Zaroshchinskiy, L. V. Marmarshtein, O. G. Muzalevskii. Vest. mash. 31 no. 10, 1951.

Monthly List of Russian Accessions, Library of Congress, September 1952 UNCLASSIFIED.

S/145/61/000/008/003/003
D262/D304

AUTHOR: Zaroshchinskiy, M. L., Doctor of Technical Sciences, Professor

TITLE: Determining metal pressure on rolls at hot rolling

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, n. 8, 1961, 107-120

TEXT: In this work the author attempted to simplify the formula by A. I. Tselikov (Ref. 1: Prokatnyye stany (Rolling mills), Metallurgizdat, 1946) by introducing two new conditions: Coefficient of friction is equal to the tangent of the angle of mp ($f \approx tg\delta$) and the ratio of the neutral angle and the angle of mp ($\frac{\gamma}{\delta}$) equals 0.5. The original formula:

$$\frac{P_{av}}{k} = \frac{2(1-\varepsilon)}{\varepsilon(\delta-1)} \cdot \frac{h_H}{h_1} \left[\left(\frac{h_H}{h_1}\right)^{\delta} - 1\right] \qquad (1)$$

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Determining metal pressure ...

is transformed into:

$$\frac{p_{av}}{2k} = \frac{1 - 0{,}75\varepsilon}{1 - \varepsilon}\left[\left(\frac{1 - 0{,}75\varepsilon}{1 - \varepsilon}\right)^2 - 1\right] \qquad (13)$$

where: p_{av} - average specific pressure in kg/mm^2, k - resistance to deformation in kg/mm^2, and ε - relative reduction in thickness. Two examples are worked out and the results analyzed. The author states that his formula is effective for speeds of rolling up to 5 m/sec and where the coefficient of friction is close to the tangent of the angle of mp. The calculated values are very close to the actual results in the case of cold sheet rolling and sufficiently satisfactory in the case of rolling in roughing and billet mills. There are 4 tables, 1 figure and 12 references: 10 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: L. R. Underwood, The Rolling of

Card 2/3

Determining metal pressure ... S/145/61/000/008/003/005
D262/D304

Metals, Theory and Experiment, Part XII, Sheet Metal Industries, 1946, no. 234, Oct.; John H. Greiner, Recent Hot Strip Mill Roughing Trains, Iron and Steel Engineer, 1958, Sept.

ASSOCIATION: MVTU im. N.E. Baumana (MVTU im. N. E. Bauman)

SUBMITTED: April 20, 1961

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S/145/61/000/010/006/008
D221/D304

AUTHORS: Zaroshchinskiy, M. L., Doctor of Technical Sciences, Nikitin, G. S., Professor, Assistent, and Sinel'nikov, Yu. I., Assistent

TITLE: Determination of energy-force parameters in rolling special alloy sheets

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyenie, no. 10, 1961, 168-179

TEXT: The following parameters were determined experimentally: Vertical and horizontal components of metal pressure on rollers; the torque of the main shaft; rolling temperature and the conditions of forming. Load cells were used which were calibrated by hydraulic jacks. The pusles of transducers were amplified by an ЭТ-4-53 (ET-4-53) amplifier and recorded by МПО-2 (MPO-2) oscillograph. The temperature was measured by the photo-electric pyrometer ФЭП (FEP) and recorded. The "spring" of the mill was plotted

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in order to find the precise forming of the strip. A list is given of alloys which were rolled. The experimental isothermic relationships $P_{av} = f(\frac{1}{H_{av}})$ are illustrated. The minima of these curves for the majority of alloys are identical and correspond to $\frac{1}{H_{av}} = 0.7 - 0.8$. The curves are plotted for 1000 - 1200°C, and the value for P_{av} varies for lower temperatures. The tabulated results indicate that maxima torque values exceed the permitted magnitude of moment for the safety pins of the gear clutch which actually caused stoppages. Analysis of oscillograms revealed the cyclic character of load of the main shaft which is asymmetrical and has a decay at the end of the pass. It was noticed that peak torque varies with the plasticity of the rolled material. The effect of the ratio of rollers on the static and dynamic processes of rolling was also investigated. Analysis of results revealed that lower ratio results in reduced steady torques and also in peak values of the

latter. The conditions of strip pinching were improved, and the bending of the strip was reduced. The forces of friction in the bearings are neglected, and it is assumed that a simple process of rolling takes place. After a mathematical manipulation, the author deduces the equation for the torque of rolling as a function of angles of pinch. The rolling in a three-high Lauth mill produces a displacement of the central roll, Δ_1, and an opposite shift of the upper roll, Δ_2 which are due to clearances. The geometrical sizes of the deformation center in this case remain the same as during rolling without displacement. The mathematical analysis results in another equation for the general torque of rolling. This can be simplified by making some assumptions, when

$$M_{gen} = P\left[\sqrt{R_{av}\,\Delta h}\;0{,}5\left(\frac{D}{d}+1\right)+\Delta\left(\frac{D}{d}+1\right)\right] \qquad (23)$$

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Determination of energy-force ...

is deduced, where R_{av} is the oscillating radius in the case of rolling with different diameter rollers, $R_{av} = \frac{Dd}{D+d}$. The above equation is modified if friction in journals is taken into account. The experimental results are in good agreement with this equation. Consequently, the static moments on the main shaft of the mill can be explained by clearances, large losses due to friction, and the arrangement of the three-high rolling. The horizontal force is given by

$$M_{gen} = P\left[\sqrt{R_{av}\Delta h}\ 0{,}5\left(\frac{D}{d}+1\right)+\Delta\left(\frac{D}{d}+1\right)+\mu' d'\right]\frac{1}{\eta^i} \qquad (24)$$

The theoretical analysis revealed the low efficiency of the Lauth mill. The reduction of the ratio of diameters results in lower static and dynamic torques, better biting and reduced bending of the strip. There are 4 figures, 3 tables and 4 Soviet-bloc references.

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Determination of energy-force ... S/145/61/000/010/006/008
D221/D306

ASSOCIATION: MVTU im. N. E. Baumana (MVTU im. N. E. Bauman)

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TSELIKOV, A. I., Prof., ZAROSHCHINSKIY, M. L., MARMARSHTEIN, L. V., MUZALEVSKIY, O. G., (Reviewers)

Rolling (Metal Work)

Theory of rolling. M. Pavlov, Author. Reviewed by A. I. TSelikov, Prof., M. L. Zaroshchinskiy, L. V. Marmarshtein, O. G. Muzalevskiy. Vest. mash. 31, No. 10, 1951.

9. Monthly List of Russian Accessions, Library of Congress, September, 1952 1953. Unclassified.

TSELIKOV, A. I., Prof., ZAROSHCHINSKIY, M.L., MARMARSHTEIN, L. V., MUZALEVSKIY, O. G., (Reviewers)

Rolling (Metal Work)

Theory of rolling, M. Pavlov, Author, Reviewed by A. I. TSelikov, Prof., M. L. Zaroshchinskiy, L. V. Marmarshtein, O. G. Muzalevskiy. Vest. mash. 31, No. 10, 1951.

9. Monthly List of Russian Accessions, Library of Congress, September, 1952 1953. Unclassified.

TSELIKOV, A.I., Prof., ZAROSHCHINSKIY, M.L.

MARMARSHTEZN, L. V., MUZALEVSKIY, C. G. (Reviewers)

Rolling (Metal Work)

Theory of rolling. M. Pavlov, Author, Reviewed by A. I. TSelikov, Prof., M.L. Zaroshchinskiy L.V. Marmarshtezn, O.G. Muzalevskiy. Vest. mash. 31, No. 10, 1951.

Monthly List of Russian Accessions, Library of Congress, September 1952. UNCLASSIFIED.

ŻÁRÓSKI J., Naczelnik Wydzialu Zdrowia Urzedu Wojewodzkiego w Poznaniu. Wplyw pracy konsultanta do spraw nadzoru fachowego na podniesienie poziomu szpitalnictwa z punktu widzenia administracji szpitalnej The influence of control by specialists on the level of hospital work from the administrative point of view Szpitalnictwo Polskie, Warsaw 1949 2/1 (61-65)

The contact between clinical teachers and provincial hospital staff is mutually valuable. Provincial surgeons and obstetricians are now using more of the recent improvements in operative technique. The influence of specialists on the physicians in the field of internal medicine and pediatrics is more restricted. The influence of the work of consultants on the level of hospital work will only be manifest after several years. The necessity of postgraduate work in university clinics is stressed.

Makower - Wroclaw

So: Medical Microbiology & Hygiene Section IV, Vol. 3, No. 7-12

INVENTOR: Zaroslov, Yu. A.

ORG: none

TITLE: Separator unit for removing air from liquid. Class 59, No. 187529

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 20, 1966, 195

TOPIC TAGS: flow separation, mechanical separation, industrial separation, gas filter, filtration

ABSTRACT: An Author Certificate has been issued for a separator unit for removing air from liquid circulating in a closed hydraulic system. It consists of a cylinder with a tangential liquid inlet and outlet from the upper and lower part of the cylinder, respectively (for developing a rotating stream), and a tank with liquid; the latter is located above the cylinder and connected with its upper central portion by an air-tapping pipe. To expel more air from the cylinder, the air-tapping pipe is connected to the bottom of the tank; to the lower central part is fastened an additonal tube, the other end of which is also connected to the bottom of the tank in an area separated from the place where the first tube is attached. Due to the difference in the specific weights of clean and foaming liquids, and additional circulation loop is produced. Orig. art. has: 1 figure. [WA-98]

SUB CODE: 13/ SUBM DATE: 20Mar65/

Card 1/1 UDC: 621.928.4:621.187.124

ZAROV, G.V.

New methods of control in the production of bisulfite. Zav.lab. 26 no.8:940-943 '60. (MIRA 13:10)

1. Chernorechenskiy khimicheskiy zavod im. M.I. Kalinina.
(Sulfites) (Iodometry)

ACCESSION NR: AP5010066

AUTHOR: Zapovskiy, E. I.

TITLE: Necessary and sufficient conditions for absolute minimum

SOURCE: AN SSSR. Doklady, v. 163, no. 1, 1965, 26-29

TOPIC TAGS: optimal control

ABSTRACT: Let $t = (t^1,\ldots,t^m)$, $x = (x^1,\ldots,x^n)$ and $u = (u^1,\ldots,u^n)$ be elements of vector spaces T, X, and U respectively, and let A be a closed region in T bounded by a continuous piecewise smooth hypersurface S, with $t = \tau$ on S. The author proves several theorems concerning the absolute minimum of the functional

$$\overline{I}(x,u) = \int_A f^0(t,x,u)\,dt + F(x(\tau)), \qquad (1)$$

of which the following are representative. Theorem 1. In order for the pair $\bar{x}(t)$, $\bar{u}(t) \in D$ to minimize the functional (1), it is necessary and sufficient that there exist functions $\varphi_j(t,x)$ $(j = 1,\ldots,n)$ such that:

1) for all $t \in A^* = A \setminus S$, except for a finite number of points,

$$R(t,\bar{x}(t),\bar{u}(t)) = \sup_{x,u\in E} R(t,x,u); \qquad (2)$$

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2) for all $\tau \in S$,

$$G(\bar{x}(\tau)) = \inf_{x(\tau)\in B(\tau)} G(x(\tau)) \qquad (3)$$

where R and G are given by

$$R(t,x,u) = \sum_{j=1}^{m}\left[\sum_{i=1}^{n}\frac{\partial\varphi_j(t,x)}{\partial x_i}f_i^j(t,x,u) + \frac{\partial\varphi_j(t,x)}{\partial t}\right] - f^0(t,x,u), \qquad (4)$$

$$G(x(\tau)) = F(x(\tau)) + \int_S \sum_{j=1}^{m} q_j(\tau,x)\cos(u,l^j)\,d\tau. \qquad (5)$$

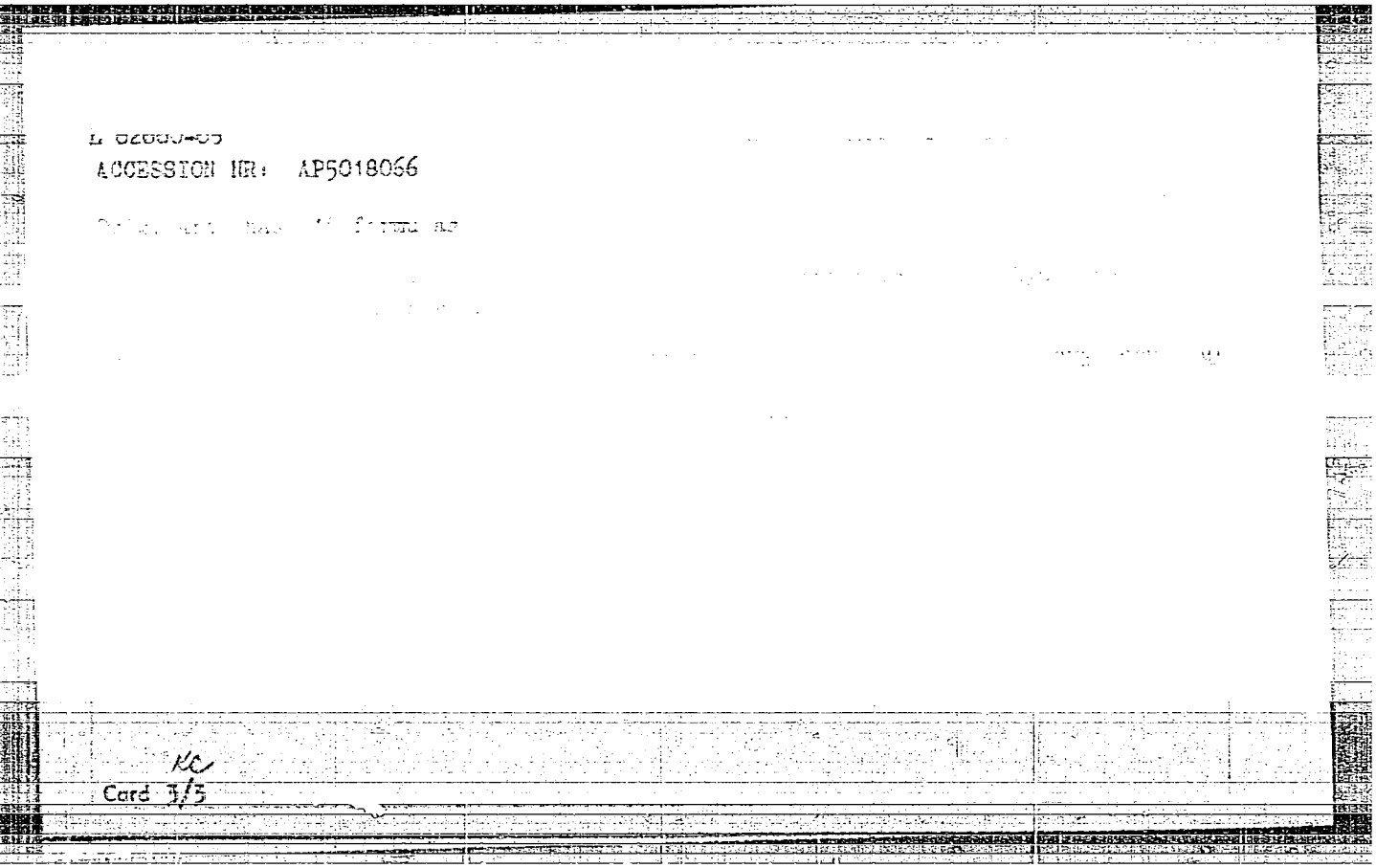
Theorem 2. Suppose there is a sequence of pairs $\{x_s(t),u_s(t)\} \subset D$. In order for this sequence to be minimizing for the functional (1) on the set D, it is necessary and sufficient that there exist functions $\varphi_j(t,x)$ $(j = 1,\ldots,m)$ such that

1) for all $t \in A^*$, with the exception of a finite number of points,

$$\lim_{s\to\infty} R(t,x_s(t),u_s(t)) = r(t), \quad r(t) = \sup_{x,u\in E} R(t,x,u); \qquad (6)$$

2) for all $\tau \in S$,

$$\lim_{s\to\infty} G(x_s(\tau)) = g(\tau), \quad g(\tau) = \inf_{x(\tau)\in B(\tau)} G(x(\tau)); \qquad (7)$$



ACCESSION NR: AP5018066

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Card 3/3

ZAROSSKIY, R.I. (Moskva)

Differentiability of the solution to the fundamental functional equation in dynamic programming. Zhur. vych. mat. i mat. fiz. 5 no.1:157-160 Ja-F '65. (MIRA 18:4)

L 15408-66

ACC NR: AP6000627 (A) SOURCE CODE: UR/0209/65/000/012/0039/0042

AUTHOR: Zarovchatskiy, V. (Captain, Master sportsman of the SSSR)

ORG: None

TITLE: In the vanguard of an airborne landing

SOURCE: Aviatsiya i kosmonavtika, no. 12, 1965, 39-42

TOPIC TAGS: parachute, specialized training, training procedure, military training, parachute jumping

ABSTRACT: The author describes in some detail, and on the basis of personal experience and participation, the operations and problems of the advance party for an airborne troop and material landing. The actions of this group are analyzed from the moment they parachute from the aircraft to the time the actual landing operation begins. Among the factors considered are the deployment of the initial communications systems, the setting up of beacons and other operational orientation markers, the effect of night-time and winter conditions on the work of the advance landing group in the preparation of the drop, the determination of the optimum release point for subsequent aircraft on the basis of preliminary reconnaissance, and certain other functions of the support group. Specific practical

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L 15408-66

ACC NR: AP6000627

recommendations are given with respect to methods of triangulation, meteorological reporting, and other operations. Orig. art. has: 1 figure.

SUB CODE: 15, 01 / SUBM DATE: none

Card 2/2